

ABSTRACT

An apparatus and a method of using the apparatus are provided for converting a gas stream containing hydrocarbons to a reaction product containing effluent molecules having at least one carbon atom, having at least one interior surface and at least one exterior surface, a first electrode and a second electrode with the first and second electrodes being selectively movable in relation to each other and positioned within the housing so as to be spatially disposed a predetermined distance from each other, a plasma discharge generator between the first and second electrodes, gas stream introducer and a collector for collecting the reaction product effluent produced by the reaction of the gas stream containing hydrocarbons with the plasma discharge between the first and second electrodes.